

ISO
TC184/SC4

SC4 Data Architecture PWI

Report to WG10
Report to PPC/Conveners Meeting
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PWI Deliverables

- Requirements statement
- Overview documents
 - What the architecture is, and how it works
 - How the architecture is used
- Demonstration of the architecture in practice
- Detailed technical specifications
 - Architecture description
 - Methodology
 - Requirements on EXPRESS-2, EXPRESS-X

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Focus of Requirements

- Integration, harmonization and mapping between different data models
- Sharing, integration and reconciliation of data from multiple sources
 - Data warehousing in particular
- Methods for addressing existing issues
 - Upward compatibility
 - “Bad” modelling practices
 - Overlap of scope between existing SC4 standards

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Requirements statement

- Inputs (N122, N136) reviewed at May workshop
- Updated for review at Bad Aibling (N173)
 - Business requirements
 - Technical requirements
 - Critical success factors
- Input to PPC activity on Functional Requirements
 - Follow-up to last year's *ad hoc* workshop at NIST

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Overview documents (1)

- WG10 N174: SC4 Architecture and Methodology Overview
 - What the architecture is - “how does it solve the problem”
- More detail given in ...
 - Architecture presentation (N148)
 - High level data model (N134+N154)
- Basis for future methods, guidelines and procedures

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SC4 Data Architecture Summary (1)

- An additional (SC4) architecture for industrial data, not “the new STEP architecture”
 - need not impact any other SC4 standard
 - other standards may migrate towards the new architecture as they see fit
- Designed to enable the integration/translation of data from/between any STEP AP, P-LIB, MANDATE, Oil and Gas, any other model

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SC4 Data Architecture Summary (2)

- Key aspects of the new standard will be
 - An Integration Model based on very generic ideas
 - Projecting and translating into other useful forms (e.g. a more concrete schema for exchange)
 - Potential new implementation methods for data sharing and integration
- Exactly what will be standardized has not yet be determined

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Overview documents (2)

- WG10 N175: Applying the SC4 Architecture
 - Less mature than N174
- Technical baseline documents:
 - Wenzel (N147)
 - Implementation approaches (N153)
 - Usage scenarios (starting point for architecture demonstration)

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Technical specifications

- Too early to state what Standards will be required
- ... but NWIs may be required to cover at least some of:
 - languages
 - data types
 - models
 - mappings
 - API specs
 - conformance

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What is an “Integration Model”?

- Based on very generic modelling concepts
 - “Ontological” approach
 - Exploiting practical research results from computer science, AI, and philosophy
- Integration model provides a basis for:
 - modelling at different levels of abstraction
 - managing change to the model
 - modelling of constraints
 - use of multiple modelling languages

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Exploitation roadmap (NWI)

- Milestones
 - Optional migration
- } *Close relationship with
Change Management*
- Dependencies between architectural elements
 - Plan/schedule for architectural elements
 - Mapping of current SC4 models, EPISTLE, ...

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May workshop results

- Requirements
 - Reviewed functional requirements (N122) and technical requirements (N136)
 - Updated, merged version for Bad Aibling
- Reviewed Orlando ISO N148 presentation
- Planned demonstration/proof-of-concept
- Next steps
 - Bad Aibling ISO status update
 - Next workshop August 17-19 (Oslo) *provisional*

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Demonstrating the architecture

- What needs to be demonstrated?
- What does an Integration Model look like?
- How does the Integration Process work?
 - Discovering, recognizing, relating “irreducible” concepts
- How does mapping work?
- This architecture can solve a real problem

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Demonstration scenario

- Scope :
 - Product identification, classification and versioning
 - Design information
 - Assembly and BOM
 - Approvals
 - Properties as a second phase if time allows
- Models to be used:
 - AP203 IS CC1, PDM AP
 - AP218 ARM, AP218 AIM, Oil and Gas, P-LIB

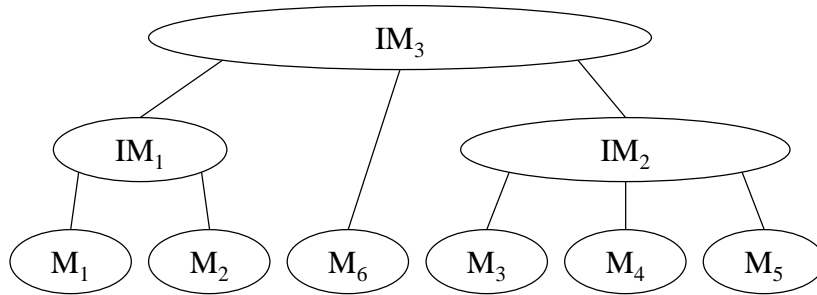
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Integration models



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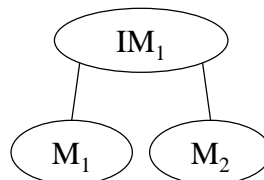
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Integration and external models

- “Mapping” process involves some or all of:
 - subsetting
 - extension
 - projection
 - transformation
 - translation
 - encoding
- Mappings themselves become part of the integration model



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The Demonstration Plan (1)

- Stabilize a draft Integration Model
- Take existing models and make them more generic
- Perform the integration based on the identified scope
- Produce example of each component in the architecture based on this scope
 - Including mapping between the data models

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The Demonstration Plan (2)

- Publish results as a proof-of-concept and to gather feedback
 - Include relationship back to STEP, P-LIB and Oil and Gas
- This will take 6-12 months and should precede any NWIs

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Issues (1)

- Requirements identified that EXPRESS does not yet meet
 - Instances, classes and mappings all in one integrated language environment
- Dependency on EXPRESS-X for mapping and projection
 - explicit requirements not yet documented
- No work supporting behaviour, which is coming in EXPRESS-2

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Issues (2)

- Goal states support for languages other than EXPRESS
 - Which ones? When? Why?
- Process
 - A very disciplined integration process is fundamental but has not yet been developed
 - What are real requirements to be met?

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